## Space Weather Forecast

Issued on Sunday, 25 August 2024 at 01:13 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Moderate Solar Activity expected. Chance of G1 Minor Storm intervals day 3 (27 Aug) from coronal mass ejection arrival.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Moderate with four Moderate class-flares observed, the strongest at 24/2324 UTC from a region comprised of a string of smaller spots, just east of south-centre disc. This region has been growing and includes a very small mixed polarity spot. The other main flare source was a sunspot region now just west of the south-centre disc. This region was moderately complex and the source of two small Moderate flares, but has been simplifying through the period with its intermediate spots fading. The largely inactive region in the southwest continues to be the largest spot, but has seen some decay and subsequent simplification, while the two other larger regions in the western disc also saw some decay of their peripheral spots.

No Earth-directed coronal mass ejections (CMEs) were observed.

**Solar Wind / Geomagnetic Activity:** Slow wind conditions dominated. Solar wind speed was at background, between 350 and 400 km/s. Interplanetary Magnetic Field (IMF) eased from Moderate to Weak with the north-south component weak but predominately negative (southward). Geomagnetic activity was Quiet to unsettled (Kp2-3).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Further Moderate class flares are expected with a slight chance of isolated Strong flares.

**Solar Wind /Geomagnetic Activity:** A CME from the eruption off the northwest disc just after 23/0100UTC has been reassessed as passing mainly ahead of Earth, but with a glancing impact now likely early day 3 (27 Aug). There are no other Earth-directed CMEs. No coronal hole influences are expected background solar wind speeds generally persisting. Mainly Quiet geomagnetic activity is expected with a slight chance of Unsettled spells. There is a chance of Active to G1 Minor Storm with any CME glance, most likely day 3 (27 Aug).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to remain at background, but there is a chance of this rising in response to any notable flares, especially from the regions in the western disc. This gives a slight chance of exceeding the S1 Minor Solar Radiation Storm level.

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 1 | 10 | 30 | 5 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | Yes | 80 | 80 | 75 | 70 |
| Very Active | R3 to R5 X | No | 10 | 10 | 10 | 10 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 10 | 10 | 10 | 10 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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